Application No. 10/614,324 Inventors: Norikazu Ueyama et al.

Filed July 8, 2003

Docket No.: OKA-0209 Group Art Unit: 1655

Examiner: Kailash C. Srivastava

AMENDMENTS TO THE CLAIMS, COMPLETE LISTING OF CLAIMS IN ASCENDING ORDER WITH STATUS INDICATOR

Please amend the following claims as indicated.

- 1. (Currently Amended) A metal complex comprising a functional group which-is to form has a property of forming a covalent bond with an amino group of an N-terminal amino acid residue of protein or peptide or with a carboxyl group of a C-terminal amino acid residue of protein or peptide, wherein the covalent bond to be formed between the amino group of the N-terminal amino acid residue of protein or peptide or the carboxyl group of the C-terminal amino acid residue of protein or peptide and the functional group is not cleaved in a stage of ionization in mass spectrometry.
- 2. (Currently Amended) The metal complex according to claim 1, further comprising a ligand with said functional group-which is to form having the property of forming the covalent bond with the amino group of the N-terminal amino acid residue of protein or peptide or with the carboxyl group of the C-terminal amino acid residue of protein or peptide.
- 3. (Original) The metal complex according to claim 1, wherein a metal element thereof is selected from transition metals and typical metals.
- 4. (Original) The metal complex according to claim 1, wherein a coordination number thereof is 2, 3, 4, 5 or 6.
- 5. (Original) The metal complex according to claim 1, wherein a ligand thereof is a monodentate ligand or a polydentate ligand.
 - 6. (Canceled).
- 7. (Currently Amended) The metal complex according to claim 1, wherein the functional group-which is to form having the property of forming the covalent bond with the

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amino group of the N-terminal amino acid residue of protein or peptide is a functional group which is to form has a property of forming the covalent bond through nucleophilic reaction with the amino group.

- 8. (Currently Amended) The metal complex according to claim 1, wherein the functional group-which is to form having the property of forming the covalent bond with the amino group of the N-terminal amino acid residue of protein or peptide is -CO-OR₁, wherein R₁ represents H or an active ester-forming group.
- 9. (Original) The metal complex according to claim 1, which is represented by the following general formula (I):

$$(L_2)mM(L_1) (I)$$

wherein M represents a transition metal; L_1 represents a ligand having a substituent: -CO-OR₁ (where R_1 represents H or an active ester-forming group) or -R₂-CO-OR₁ (where R_2 represents an arylene group or an alkylene group, R_1 represents H or an active ester-forming group); L_2 represents a ligand; m is a number of L_2 , indicating 0, 1, 2, 3, 4 or 5.

10. (Original) The metal complex according to claim 1, which is represented by the following general formula (II):

$$\begin{array}{c|c}
 & O \\
 & N \\$$

wherein M represents a transition metal; and R_1 represents H or an active ester-forming group represented by any of the following formula:

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- 11. (Currently Amended) The metal complex according to claim 1, wherein the functional group-which is to form having the property of forming the covalent bond with the carboxyl group of the C-terminal amino acid residue of protein or peptide is a functional group which is to form has a property of forming the covalent bond through nucleophilic reaction with the carboxyl group.
- 12. (Currently Amended) The metal complex according to <u>claim</u> 1, wherein the functional group which is to form <u>having the property of forming</u> the covalent bond with the carboxyl group of the C-terminal amino acid residue of protein or peptide is -NH₂ or -NHNH₂.
- 13. (Original) The metal complex as claimed in claim 1, which is represented by the following general formula (III):

$$(L_2)mM(L_3) (III)$$

wherein M represents a transition metal; L_3 represents a ligand having a substituent: -NH₂, -NHNH₂, -R₂-NH₂ or -R₂-NHNH₂ (where R₂ represents an arylene group or an alkylene group); L_2 represents a ligand; m is a number of L_2 , indicating 0, 1, 2, 3, 4 or 5.

- 14. (Original) A reagent for determining amino acid sequence of protein or peptide, which comprises the metal complex according to claim 1.
- 15. (Original) A method for determining amino acid sequence of protein or peptide, which comprises using the metal complex according to claim 1.
- 16. (Currently Amended) A method for determining amino acid sequence of protein or peptide, which comprises

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reacting the metal complex according to claim 1 with a protein or peptide (A) of which the amino acid sequence is to be determined, to form a metal complex derivative (B) of said metal complex where the covalent bond of the functional group of the metal complex with the amino group of the N-terminal amino acid residue of the protein or peptide (A) or with the carboxyl group of the C-terminal amino acid residue of protein or peptide is formed, and analyzing the metal complex derivative (B) through mass spectrometry.

17. (Currently Amended) A metal complex comprising a functional group which is to form has a property of forming a covalent bond with an amino group of an N-terminal amino acid residue of protein or peptide,

wherein the metal complex is represented by the following general formula (I):

$$(L_2)mM(L_1) (I)$$

wherein M represents a transition metal; L_1 represents a ligand having a substituent: - CO- OR_1 (where R_1 represents H or an active ester-forming group) or - R_2 -CO- OR_1 (where R_2 represents an arylene group, R_1 represents H or an active ester-forming group); L_2 represents a ligand; m is a number of L_2 , indicating 0, 1, 2, 3, 4 or 5.

18. (Previously Presented) The metal complex according to claim 17, which is represented by the following general formula (II):

$$\begin{array}{c|c}
 & O \\
 & N \\$$

wherein M represents a transition metal; and R_1 represents H or an active ester-forming group represented by any of the following formula:

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19. (Currently Amended) A metal complex comprising a functional group which is to form has a property of forming a covalent bond with a carboxyl group of a C-terminal amino acid residue of protein or peptide, wherein the functional group which is to form the covalent bond with the carboxyl group of the C-terminal amino acid residue of protein or peptide is - NHNH₂.

20. (Previously Presented) The metal complex according to claim 19, which is represented by the following general formula (III):

$$(L_2)mM(L_3) (III)$$

wherein M represents a transition metal; L₃ represents a ligand having a substituent: -NHNH₂ or -R₂-NHNH₂ (where R₂ represents an arylene group or an alkylene group); L₂ represents a ligand; m is a number of L₂, indicating 0, 1, 2, 3, 4 or 5.

21. (Currently Amended) A method for determining amino acid sequence of protein or peptide, which comprises

reacting a metal complex which comprises a functional group which is to form has a property of forming a covalent bond with an amino group of an N-terminal amino acid residue of protein or peptide or with a carboxyl group of a C-terminal amino acid residue of protein or peptide, with a protein or peptide (A) of which the amino acid sequence is to be determined, to form a-metal-complex derivative (B) of said metal complex where the covalent bond of the functional group of the metal complex with the amino group of the N-terminal amino acid residue of the protein or peptide (A) or with the carboxyl group of the C-terminal amino acid residue of protein or peptide is formed, and

analyzing the metal complex derivative (B) of said metal complex through mass spectrometry.